SALUKI TECHNOLOGY

SAM-B Modular Spectrum Analyzer

Introduction

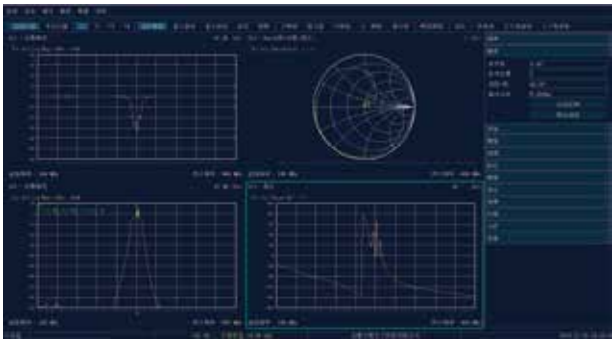
The SAM-B series modular spectrum analyzer is a multi-functional modular instrument integrating spectrum analysis, vector network analysis, cable and antenna test, modulation analysis, monitoring and reception, and other functions. Featuring multiple measurement capabilities, excellent performance, a compact size, and ultra-high cost-effectiveness, this product is an ideal choice for system integration applications.With comprehensive testing functions, the SAM-B Series Modular Spectrum Analyzer is highly suitable for scenarios requiring testing of various parameters. It not only facilitates users' integrated testing but also reduces costs. Standard LAN or USB control interfaces can be selected as needed to directly obtain measurement results. By using the standard SCPI command set and SDK, integrated testing systems can be quickly built and upgraded

Features

- Frequency range：5kHz~2GHz/3.6GHz/8GHz
- It supports multiple measurement modes such as spectrum analysis, vector network analysis, cable and antenna test, measurement, modulation analysis, and receiver mode
- Multiple frequency conversion mode with high intermediate frequency/image frequency rejection ratio, suitable for complex electromagnetic environments
- Real-time upload of audio demodulation streams
- The module itself performs signal analysis and processing, and directly uploads measurement results
- Maximum intermediate frequency bandwidth of 80 MHz
- I/Q data stream recording with a real-time storage depth up to 4Gb
- Powered by a single power supply with a wide voltage range of 8V - 13V
- Supports dual control interfaces of RJ-45 network and USB
- Compact module size: 148mm × 94mm × 23mm, facilitating user system integration
- Provides standard PC host computer and SDK

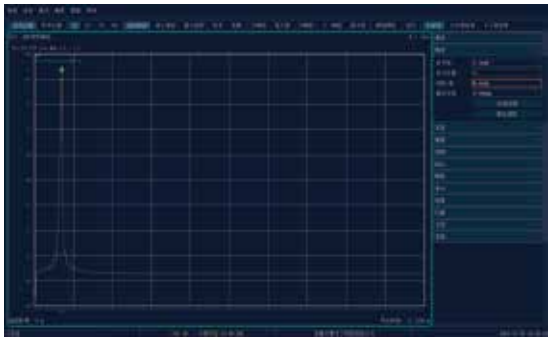
Applications

Vector network analyzer



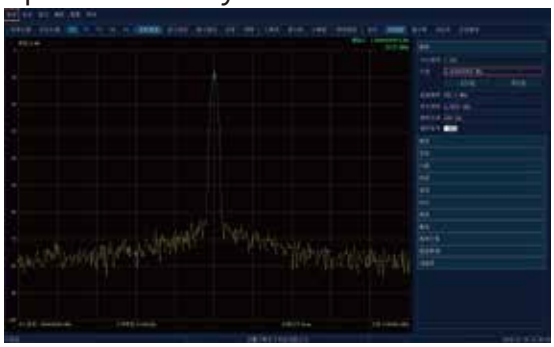
Measurement parameters：S11，S21
Multi-window measurement
Display Formats: Return Loss, Insertion Loss, VSWR ，Phase, Group Delay, Smith Chart

Cable and antenna test



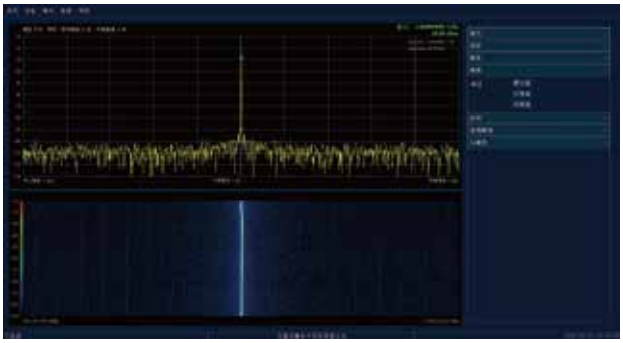
CAT can detect and pinpoint issues such as open circuits, short circuits, poor connections, water ingress, corrosion, excessive bending, or any other factors leading to reduced signal transmission efficiency.

Spectrum analyzer



Wide frequency band, large dynamic range;
Excellent small signal measurement capability;
Equipped with a variety of advanced measurement functions.

Receiver mode



The receiver mode is used to capture and analyze radio signals, enabling spectrum monitoring, interference troubleshooting, and signal identification.

Specifications

Work Mode

Model	SAM020B	SAM030B	SAM080B
Spectrum analyzer(SA)	√	√	√
Vector network analyzer (VNA)	√	√	√
Cable and antenna test (CAT)	√	√	√
Receiver mode (RM)	√	√	√
Real-time spectrum analysis(RTSA)	√	√	√
Analog modulation analyzer(AMA)	√	√	√

Spectrum Analysis

Model	SAM020B	SAM030B	SAM080B
Frequency range	5kHz~2GHz	5kHz~3.6GHz	5kHz~8GHz
Frequency accuracy	1ppm		
Resolution bandwidth	1Hz~3MHz		1Hz~5MHz
Noise level	-163dBm		-168dBm
Phase noise	-90dBc/Hz@30kHz		-100dBc/Hz@10kHz
Sweep time	3ms~3000s (Span＞0Hz)，1ms~3000s (Span=0Hz)		20us~3000s (Span＞0Hz)，5ms~3000s (Non-Span=0Hz)
Overall amplitude accuracy	±1.5dB		
Attenuator	30dB，steps of 1 dB		
IF/ Image rejection	60dB/60dB (typical)		90dB/90dB (typical)

Vector network analyzer

Model	SAM020B	SAM030B	SAM080B
Frequency range	100kHz~2GHz	100kHz~3.6GHz	100kHz~8GHz
Measurement parameters	S11、S21		
Output power range	-30dBm~0dBm，1dB step		
IF bandwidth	1kHz~200kHz		
Display mode	Return loss/VSWR, Insertion loss, Smith, Phase,Polar Group delay		
Effective directivity	≥38dB (5MHz~2GHz/3.6GHz)		≥38dB (1MHz~8GHz)
Dynamic range	80dB (S21，1kHz RBW，Log mag, Average=50，>10MHz)		80dB (S21，1kHz RBW，Log mag, Average=50，>10MHz)

Cable and antenna test

Model	SAM020B	SAM030B	SAM080B
Frequency range	100kHz~2GHz	100kHz~3.6GHz	100kHz~8GHz
Effective directivity	≥38dB (1MHz~2GHz/3.6GHz)		≥38dB (1MHz~8GHz)
Number of data points	101~2048		
Measurement parameters	Distance to fault ,VSWR Cable Loss, Return Loss		

Analog modulation analyzer

Model		SAM020B		SAM030B	SAM080B
Carrier Frequency		2MHz~2GHz		2MHz~3.6GHz	2MHz~8GHz
AM measurement	Modulation rate	20Hz~100kHz	Accuracy	1Hz,Nominal(forModulationRate<1kHz);<0.1%ofModulationRate, Nominal(forModulationRate≥1kHz)	
	Depth	5%~95%	Accuracy	±4%，Nominal	
FM measurement	Modulation rate	20Hz~100kHz	Accuracy	1Hz,Nominal(forModulationRate<1kHz);<0.1%ofModulationRate, Nominal(forModulationRate≥1kHz)	
	Deviation	500Hz~400kHz	Accuracy	±4%,Nominal	
Real-Time acquisition of I/Q data	Maximum capture bandwidth of 5MHz				Maximum capture bandwidth 40MHz
	Maximum memory depth of 512 MB, I = Q = 2 Bytes, and I/Q data output via LAN interface				

Receiver mode

Model	SAM020B	SAM030B	SAM080B
RF characteristics			
Frequency range	5kHz ~2GHz	5kHz ~3.6GHz	5kHz ~8GHz
Panoramic scanning speed	10GHz/s@25kHz		120GHz/s@25kHz
Amplitude accuracy	±2.0dB		
Noise figure (low- noise)	15dB (Typical)		12dB (Typical)
(TOI) (f≥30MHz, low - distortion mode)	+7dBm		+15dBm
(SOI) (f≥30MHz, low - distortion mode)	+40dBm		+50dBm
Image frequency rejection (typical)	60dB		80dB
IF Rejection	60dB		90dB
Residual response	-110dB m (no more than 5points > -110dBm, f≥10MHz)		
IF characteristics			
Real - Time bandwidth	5MHz		80MHz(standard 40MHz)
IF display bandwidth	10kHz~5MHz		10kHz~80MHz
IF demodulation bandwidth	1.5kHz~5MHz		1.5kHz~40MHz
Audio demodulation	AM、FM、LSB、USB, and the audio code stream is pushed to the PC		
I/Q data	Maximum bandwidth 5MHz		Maximum bandwidth 40MHz, optional (80MHz)
	Maximum memory depth of 512 MB, I = Q = 2 Bytes, and I/Q data output via LAN interface		

General technical specifications

Inputs/Outputs	SAM020B	SAM030B	SAM080B
RF IN/OUT	RF signal input/output, SMA type female (50Ω)		
LAN	10/100 Base-T, RJ-45 connector		
USB	Type-C interface , USB2.0 device port		
Ref IN/OUT	10 MHz reference Input/Output, Shared on One Port		10 MHz reference input, MMCX female connector
	MMCX female connector		10 MHz reference output, MMCX female connector
IF OUT	/		145MHz/153.6MHz IF output,MMCX female type connector
Trig In	External trigger input, 3.3V/5V TTL level, MMCX female connector		
DC IN	2-Pin connector with 2.54mmpitch (8VDC~13VDC)		
General data			
Weight	About 500g		
Core module dimensions	148mm×94mm×23mm		
Optional enclosure dimensions	166mm×102mm×37mm		
Operating temperature	0°C - 50°C (standard working temperature)		
	-25°C - 60°C (optional working temperature)		
Storage temperature	-40°C~+70°C		
Power supply	Input voltage	+8VDC~+12VDC	
	Current	about1.0A (+12VDC)	about1.2A (+12VDC)

Ordering Information

Configuration	Designation	Order Number		
Host of spectrum analyzer	The module comes with GPSA mode as standard	SAM020B	SAM030B	SAM080B
Accessories	CD-ROM (user manual、programming manual、PC host computer software)			
	AC/DC adapter (AC input, +12V DC output)			
	RJ45 ethernet cable			
Options	Vector network analyzer	SAM020B-VNA	SAM030B-VNA	SAM080B-VNA
	Cable and antenna test	SAM020B-CAT	SAM030B-CAT	SAM080B-CAT
	Real-time Spectrum Analysis	SAM020B-CAT	SAM030B-CAT	SAM080B-RM40
	Receiver mode	SAM020B-RM	SAM030B-RM	SAM080B-RM40
	Receiver mode (5kHz ~ 8GHz,80MHz)	/		SAM080B-RM80
	Vector voltmeter	SAM-VVM		
	Analog modulation analyzer	SAM-AMA		
	Module housing (166mm × 102mm × 37mm, with cooling fan)	SAM-WK		
	Near-field probe	ANT01		
	Broadwidth omni-directional antenna (300MHz~7.5GHz)	OA750		
	Broadwidth directional antenna (600MHz~8GHz)	DA800		
	Mechanical calibration kits (DC~9GHz)	CK009		
	Wide Temperature Range (Operating Temperature: -25°C ~ 60°C)	SAM-WT		